

NEW AND LITTLE KNOWN INDIAN BOMBYLIIDÆ

BY

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(With a plate.)

The publication of Brunetti's Vol. I, Diptera Brachycera of the Fauna of British India series has stimulated me to attempt the determination of some of the Diptera I had collected while in India. My entomological energies during the last part of my Indian service were devoted chiefly to Hymenoptera, but I carefully preserved any conspicuous Diptera that I came across, and thus amassed a fair amount of material. Having recently come to reside in London in close proximity to the Natural History Museum, I have had opportunities of comparing my specimens with those in the national collection, and of access to the unrivalled library of the Museum. In working through the *Bombyliidæ* I found that I had taken representatives of several genera which had not previously been recorded from India, and a considerable number of species which are either undescribed, or have only been recorded from outside Indian limits. I therefore decided to publish the result of my studies.

I have to acknowledge the kind help of Major E. E. Austen, D.S.O., who has not only given me the benefit of his opinion from time to time, but has also placed at my disposal his private copies of several pamphlets dealing with the *Bombyliidæ*.

The present paper covers only the genera *Litorrhynchus* and *Exoprosopa*, but I hope later on to work through the other genera of *Bombyliidæ* as represented in India.

Litorrhynchus, Macq.

This genus, of which the original spelling was *Litorynchus*, was erected in 1840 by Macquart to include certain species of *Exoprosopa* which have a more or less rounded face, long proboscis, and peculiar wing pattern. Most subsequent authors, including Brunetti in Vol. I, Diptera Brachycera, have sunk it as a synonym of *Exoprosopa*. I follow Professor Bezzi (Tr. Ent. Soc., 1911, p. 629) in keeping the two genera distinct, although one or two of what he regards as the essential characters of the genus do not quite apply to the only two species known from India. In these the proboscis, though considerably longer than the head, is not twice as long, and the style is somewhat shorter than the 3rd antennal joint.

The two Indian species may be distinguished as follows:—

Sides of 1st abdominal segment with white hairs *lar*, Fab.

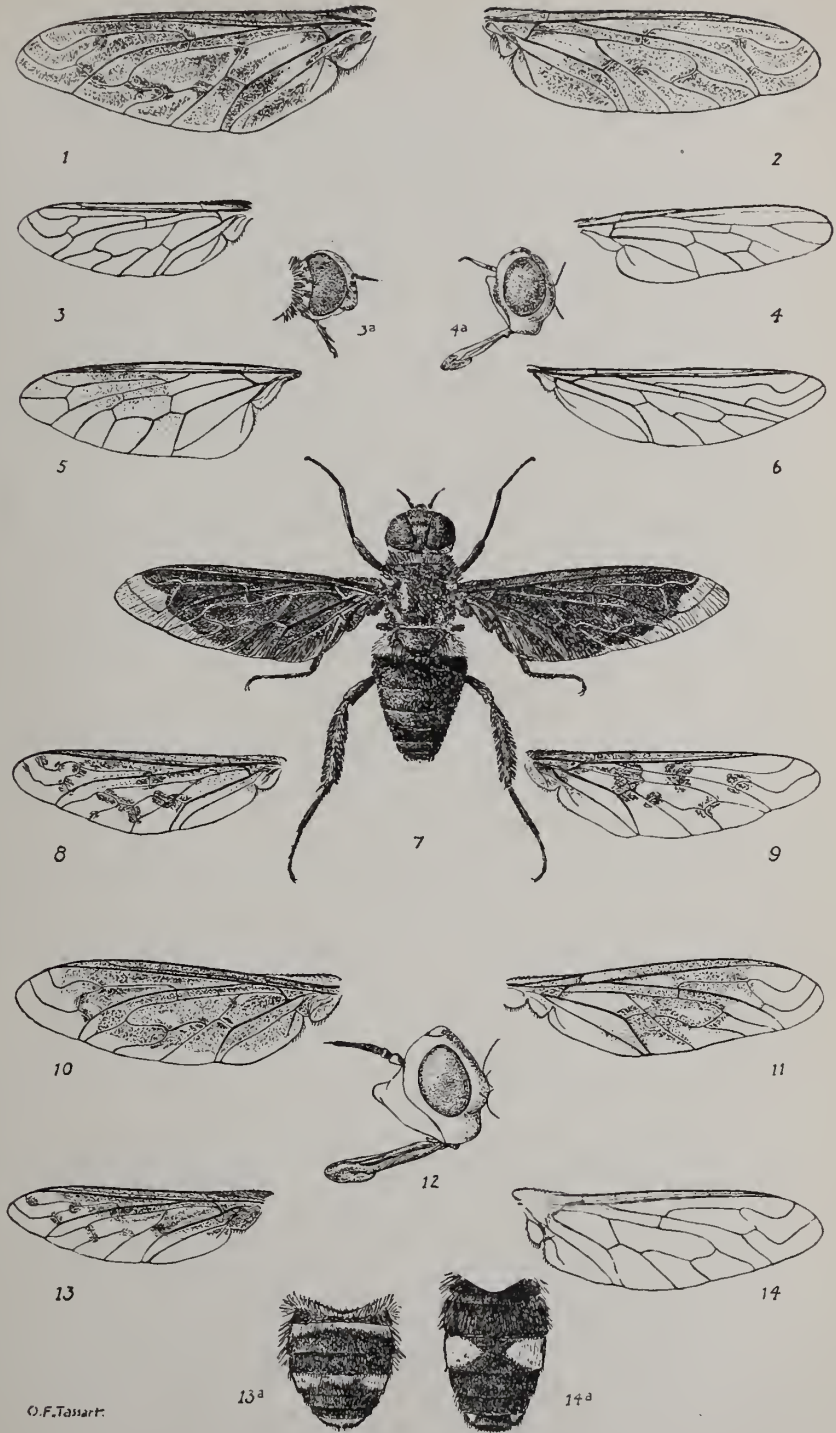
Sides of 1st abdominal segment with black hairs *collaris*, Wied.

Brunetti sinks *collaris* as a synonym of *lar*, but I hold very strongly that they are quite distinct. The wing band in *collaris* is darker than in *lar*, and its outer border less rugged. The ground colour of the abdomen in *collaris* is black and in *lar* rufous or rufescent. In *lar* there are white hairs near the apex of abdomen, but these are absent in *collaris*. These differences are not sexual, as I have both sexes of *collaris*.

Both species appear to be widely spread in India; Brunetti records them from various localities, and I found both at Deesa and Jubbulpore. The pubescence on the abdomen of most of my specimens of *collaris* is not at all rubbed, and the hair at the sides of the 1st abdominal segment is pure black, though there are a few white hairs on the thorax below the postalar calli.

The figure of the wing (fig. 3, plate III) given in Vol. I, Diptera Brachycera, agrees better with *collaris* than with *lar*.

The two specimens now in the British Museum mentioned by Brunetti on p. 196 as having been obtained by Col. Yerbury in Ceylon, belong to two different species, and should probably be assigned to *Exoprosopa* rather than to the



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present genus. The one labelled “? *binotata* Macq.” does not agree with Macquart’s description of that species.

Exoprosopa, Macq.

This is a very rich and rather heterogeneous genus, as Professor Bezzi remarks in Tr. Ent. Soc., 1911, p. 635. It will probably be split up eventually, and some of the species at present included in it will have to go elsewhere. In working out my specimens I was much puzzled by a species that occurs at Mount Abu, which has the neururation of *Exoprosopa*, but the wing pattern of *Thyridanthrax*. Looking over some insects which had recently been returned to the British Museum by Professor Bezzi, I found that he had described it as a *Thyridanthrax* from Africa, where it is widely spread. I also note that he now places Loew’s *Exoprosopa lata* in *Thyridanthrax*, although he recorded it as an *Exoprosopa* in Tr. Ent. Soc., 1911, p. 645.

When the Indian dipterous fauna becomes better known, the number of species of *Exoprosopa* that occur in that country will certainly be increased by numerous additions. There are, both in the British Museum and in my own collection, a number of specimens which undoubtedly belong to undescribed species, but in most cases they are in indifferent condition, and to describe new species from examples more or less denuded of their pubescence is only to increase the difficulties of future students of Diptera. As regards the generic characters Brunetti makes a slight slip on p. 190 of Vol. I. His statement “all tibiæ without spinules” should read “fore tibiæ without spinules,” as most of the species, if not all, have spinules on the intermediate and posterior tibiæ.

The following key to the species recorded from India is based as far as possible on Brunetti’s table of species on pp. 190-192 of his work. It must not be taken as dividing them according to their affinities, but it ought to assist a collector to name his specimens, unless he obtains anything new to India. In preparing the key I have relied on Brunetti’s descriptions as regards the following species—*flavipennis*, *otylata*, *puerula*, *annandalei*, *brahma*, and *vitrea*. All the other species are represented either in the British Museum or in my own collection.

Key to the Indian Species of *EXOPROSOPA*.

- | | | |
|----|--|---------------------------------|
| 1. | 1st posterior cell closed | 2 |
| | Do. open | 9 |
| 2. | Wings bright yellow at base | 3 |
| | Wings not bright yellow at base | 5 |
| 3. | Wings with two brown bands | <i>flammea</i> , Brun. |
| | Wings with only one brown band | 4 |
| 4. | Abdomen with the ground colour black | <i>flavipennis</i> , Brun. |
| | Do. do. red | <i>tamerlan</i> , Portschinsky. |
| 5. | 1st posterior cell long stalked | 6 |
| | Do. short stalked or closed on the margin | 7 |
| 6. | 4th longitudinal vein interstitial with cross vein connecting 3rd and 2nd longitudinal veins | <i>interstitialis</i> , n. sp. |
| | 4th longitudinal vein not interstitial | <i>fusconotata</i> , Beck. |
| 7. | Wings very dark brown at base | <i>siva</i> , n. sp. |
| | Wings not dark brown at base | 8 |
| 8. | Apex of wings hyaline | <i>albida</i> , Walk. |
| | Do. more or less infuscated | * <i>abjecta</i> , n. sp. |
| 9. | Wings wholly black or blackish | <i>latipennis</i> , Brun. |
| | Wings not wholly black or blackish | 10 |

* This species sometimes has the 1st posterior cell open, and therefore appears again below.

10. Hind tibiæ with long and dense scales 11
 Do. without long and dense scales 12
11. Sides of 1st abdominal segment with black hairs .. *pennipes*, Wied.
 Do. do. white hairs .. *pennata*, n. sp.
12. 1st posterior cell with an additional transverse vein
 in its centre *evanescons*, Bock.
 Do. without an additional transverse
 vein in its centre 13
13. 2nd posterior cell twice as wide at base as at tip .. 14
 Do. as wide at tip as at base or
 wider 15
14. Larger ; 14-18 mm. ; sides of abdomen with black
 hairs *lateralis*, Brun.
 Smaller ; 8-12 mm. ; sides of abdomen without black
 hairs *gujaratica*, n. sp.
15. Baso-anterior half of wing considerably darker than
 the remainder 16
 Basi-anterior half of wing not or scarcely darker
 than the remainder 21
16. Dorsum of abdomen with white scale-spots .. 17
 Do. without white scale-spots .. 18
17. Larger ; 14 mm. ; antennal style normal .. *maculiventris*, Brun.
 Smaller ; 8 mm. ; antennal style as long as 3rd joint *stylata*, Brun.
18. Clear part of wing without isolated dark spots .. *puerala*, Brun.
 Do. with isolated dark spots .. 19
19. Abdominal ground colour, black or blackish .. *insulata*, Walk.
 Abdominal ground colour, red or brown .. 20
20. Baso-costal band flavous *abrogata*, n. sp.
 Do. not flavous {
alexon, Walk.
annandalei, Brun.
21. Wings more or less infuscated, though there is no dis-
 tinct baso-costal band 22
 Wings almost clear, though the marginal cell may
 be darkened 24
22. Tip of wings hyaline *dissoluta*, n. sp.
 Do. not hyaline 23
23. Wings mainly tawny *auriplura*, Walk.
 Wings not at all tawny *abjecta*, n. sp.
24. Thorax and abdomen with iridescent blue scales .. *iridipennis*, n. sp.
 Do. white or grey scales .. 25
25. Cross veins more or less suffused 26
 Do. quite clear 27
26. Scutelluræ and antennæ, black *bengalensis*, Macq.
 Do. reddish yellow or brown .. *brahma*, Schin.
27. Antennæ wholly black 28
 Some joints of antennæ red or ferruginous .. 30
28. Larger ; 15 mm. or more *niveiventris*, Brun.
 Smaller ; 13 mm. or less 29
29. Thorax and abdomen with bright yellow hairs .. *vitrea*, Brun.
 Do. without bright yellow hairs .. *punjabensis*, n. sp.
30. Antennæ entirely brownish yellow *vitreipennis*, Brun.
 Do. only ferruginous at base *basifascia*, Walk.

(In order to assist entomologists working in India, I have given below abbreviated descriptions of any species now recorded from Indian limits which have already been described, but which are not included in Vol. I of *Diptera Brachycera*.)

Exoprosopa tamerlan, Portschinsky.

Horæ Soc. Entom. Ross, Vol. XXI, p. 185.

♂ ♀ Head, including antennæ, thorax and abdomen mainly or entirely red, covered with rufous scales and rather sparse pubescence of similar colour; 3rd abdominal segment bears a small spot of white scales on each side, but this is often obsolete or abraded: legs mainly black, wings with a broad yellow bases costal band, margined posteriorly by a brown band, the latter varying considerably in width and intensity, apical and posterior margin hyaline; 1st posterior cell closed, the 4th vein meeting the 3rd nearly half way between the fork of the latter and the wing border.

Length 18-21 mm.

This fine species is common at Quetta, where I obtained nine specimens which agree well with Portschinsky's description, and also with the figure given in Becker's *Persische Dipteren*.

Originally described from Merv, and Becker records it from Persian Baluchistan.

Exoprosopa interstitialis, n. sp.

♂. Head; frons at level of antennæ rather more than one-third the width of head, not much narrowed at vertex; upper mouth edge protruding, viewed in profile fully half the short diameter of the eye; vertex black, with short stiff black hairs which extend nearly to the antennæ, frons and face yellowish, covered with yellowish grey scales, below which a black spot is visible just above the upper mouth edge; lower mouth edge very pale testaceous; antennæ brownish black, 1st and 2nd joints with stiff black hairs, 3rd joint, excluding style, as long as the first two combined, gradually tapering, with style $\frac{2}{3}$ of its length; proboscis rather long, blackish, palpi dark brown; occiput blackish, with a fringe of white scales along eye margins.

Thorax black, with a collar of pale yellowish grey scaly hairs, extending back towards the wing bases; disc covered with yellowish grey scales, bristles at base of wings and on postalar calli pale yellow; mesopleuræ with grey pubescence, scutellum reddish brown, with scales similar to those on the thorax; marginal bristles pale.

Abdomen mainly brick red, but all the segments are more or less black at base; disc with grey scales (partially denuded), and with a few short stiff hairs on apical margins of segments, especially towards the sides, which are thickly covered with greyish scaly hairs; venter red, covered with grey scaly hairs.

Legs chiefly red; coxæ with long grey pubescence, femora and tibiæ covered with grey scales, tarsi brownish, becoming nearly black towards apex; intermediate and posterior tibiæ with black spinules.

Wings dark brown, with a flavous tinge at base to beyond humeral cross vein; there is a very ill-defined oblique median darker band, and there are dark suffusions on all the cross veins, but the following portions of the wing are sub-hyaline, *viz.*, the greater portion of 2nd basal cell, base of anal cell, apical half of discal cell, and most of the marginal and posterior cells; in the apical fourth of wing the discs of the cells are darker than in the immediate vicinity of the longitudinal veins; the first posterior cell is closed and long stalked, the 4th longitudinal vein joining the 3rd at a right angle, and being interstitial with the cross vein connecting 3rd longitudinal vein with the lower branch of the 2nd; most of the larger longitudinal nervures are reddish brown, the smaller ones appearing darker; base of costa with numerous but very short bristles, and some golden yellow scales; halteres pale yellow, fringe of alulæ smoky.

Length 15 mm.

Described from a single specimen taken at Quetta in May. I cannot find among published descriptions any species which combines wing markings as described above with a closed 1st posterior cell.

Exoprosopa fusconotata, Becker.

Persische Dipteren., Ann. Mus. Zool. St. Petersburg, 1912, p. 566.

Head yellow or yellowish, antennæ black; thorax and scutellum blackish brown, with yellow and white scales and yellow bristles. Abdomen blackish brown, with white interrupted bands on the first four segments. Legs black; wings greyish, marginal cell yellowish brown; a brown suffusion at the posterior corner of discal cell; 1st posterior cell closed at a right angle, and stalked.

Length $10\frac{1}{2}$ mm.

The four specimens taken at Quetta agree well with Becker's description.

Exoprosopa siva, n. sp.

♂ ♀ Head; frons at level of antennæ one-third the width of head, at vertex about one-sixth in both sexes; black, covered with pale golden yellow scales and black hairs, which are longest on the frons; occiput with short whitish pubescence; antennæ black, 3rd joint rather short, being not much longer than the style; 1st and 2nd joints with black hairs, 3rd bare; proboscis nearly twice as long as head.

Thorax black; pronotum and sides with rather long pale yellowish hairs, dorsum with pale golden scales, bristles at base of wings and on postalar calli black; underside of thorax black with black hairs; scutellum black, with pale golden scales and black bristles, some of the latter being very long.

Abdomen black; 1st segment with pale yellow hairs, 2nd with a narrow basal band of similarly coloured scales, 4th and 7th segments with broad basal bands of pure white scales; venter black, sparsely clothed with greyish hairs and some yellow scales.

Legs entirely black, with some pale scales on femora and tibiæ.

Wings brownish grey, with an oblique blackish baso-costal band reaching the tip of the 1st longitudinal vein, leaving the outer and posterior margins, including most of the anal and axillary cells, clear; on the clearer portion are the following blackish spots or suffusions, viz., a spot near apex of upper branch of 3rd longitudinal vein, one at the fork of this vein, and one on the cross vein which joins the 3rd and 4th longitudinal veins, one at the apex of discal cell, extending into 2nd posterior cell, one smaller spot at lower margin of discal cell where it is joined by 5th longitudinal vein. The 1st posterior cell is closed a short distance before the margin.

Length 7-10 mm.

Described from four good specimens from Matheran. There is a similar specimen in the British Museum from Mahapur.

This species is quite distinct from *insulata* Walk, to which it bears a superficial resemblance (see remarks on that species below). It differs as follows; the wings are somewhat shorter, and the 1st posterior cell is closed, whereas it is open in *insulata*. The latter species has apical bands of yellowish scales on the 3rd and following segments, that on 4th being the most conspicuous, whereas *siva* has broad basal bands of snow-white scales on 4th and 7th segments. The oblique basocostal band is narrower in *siva*, and the spots are smaller and differently placed.

Exoprosopa albida, Walker.

Five specimens from Deesa agree with the type and description of this species. The shape of the 1st posterior cell is evidently variable; in the type it is closed and stalked; one of my specimens agrees with the type, but in the others it is closed just on or near the margin. It varies considerably in size, my largest specimen measuring 16 mm., and the smallest 11 mm. This species is very doubtfully distinct from *E. bagdadensis* Wied, which Becker records from Persian Baluchistan. The latter has the first two antennal joints testaceous, whereas in *albida* the basal joint only is of this colour.

Exoprosopa abjecta, n. sp.

♂ ♀. Head ; frons at level of antennæ about $\frac{2}{3}$ the width of head, at vertex rather more than half as wide as at antennæ; blackish at vertex, reddish towards antennæ, becoming paler near mouth edge ; facial bump viewed in profile about $\frac{2}{3}$ the short diameter of the eye ; frons and face thickly covered with greyish white scaly hairs, which are longer near antennæ ; antennæ dark red, 3rd joint more or less darkened, gradually tapering, rather longer than the 1st and 2nd joints taken together ; style about half the length of 3rd joint ; 1st joint with thick greyish hairs, 2nd with short black bristly ones.

Thorax blackish, covered with grey scales ; pronotum with a collar of very pale yellowish hairs ; thorax below and at the sides with rather long grey hairs ; scutellum dark red, with grey scales ; base of wings, postalar calli, and scutellum with long yellow bristles.

Abdomen both above and below covered with short greyish scales ; 2nd segment above with a transverse apical band of dark brown scales, and 3rd segment with indications of a similar band ; the ground colour of the abdomen is black, but the sides and apical margins of all the segments are red.

Legs red, tarsi blackish ; femora and tibiæ more or less covered with grey scales, and with short black spinules on intermediate and hind legs.

Wings light brown, darker at extreme base ; an ill-defined oblique darker band runs from the middle of the anterior margin to the anal cell ; the apical portion of the 4th longitudinal vein is strongly curved, the 1st posterior cell being either just open or closed on the margin (in one specimen closed and short stalked) ; all the cross veins have darker suffusions ; in the apical portion of wing the longitudinal veins are lighter margined, leaving the middle of the cells darker ; the 2nd posterior cell is slightly wider at apex than at base ; base of costa with yellowish grey scales, mixed with short black bristles ; halteres yellowish white.

Length 9-12 mm.

Described from eight specimens obtained at Deesa in March and April.

The oblique median wing band varies considerably in intensity ; in some specimens it is very noticeable, while in others it is scarcely darker than the rest of the wing. The ground colour of the abdomen varies from mainly red to mainly black. There appears to be little or no difference in the width of frons in the sexes.

Exoprosopa pennata, n. sp.

♂. Head with frons at antennæ about $\frac{1}{3}$ the width of head, at vertex about $\frac{1}{3}$ as wide as at antennæ ; frons black ; with short stiff black hairs and traces of white scales ; face black, covered with similar black hairs and a few white scales near eye-margins ; antennæ with 1st joint dark red, with stiff black hairs, 2nd joint black, 3rd dark red, blackish at base, gradually tapering, with similarly coloured style, which is about $\frac{1}{3}$ the length of joint ; proboscis and palpi black at base, becoming reddish at apex ; occiput with whitish scales near eye-margins.

Thorax black ; pronotum with a collar of greyish black hairs, dorsum covered with iridescent blue scales ; a patch of snow-white scales near base of wings, the remainder of sides with stiff black hairs, mixed with a few grey ones ; a few short black bristles near wing-base, and similar longer ones on postalar calli ; scutellum black, with traces of blue scales, and black marginal bristles. Abdomen black, covered with iridescent blue scales ; 1st segment with a conspicuous patch of snow-white scaly hairs on each side ; sides of the remaining segments with shorter and stiffer black hairs ; venter with the basal white patches on 1st segment extended below, and traces of white scales on segments 2-5.

Legs black, fore tibiæ and tarsi rufescent, intermediate tibiæ with several rows of moderately long spinules ; a patch of white scaly hairs on posterior coxæ ; the posterior femora at tip and the whole of the posterior tibiæ covered with long and dense brownish black scales.

Wings blackish brown, hyaline at tip and along posterior margin, the pale portion of wings limited by the tip of 2nd longitudinal vein and not quite reaching the apex of anal cell; 1st posterior and anal cells open; alula with a fringe of whitish scales; halteres brownish.

♀ Similar; frons a little wider.

Length 16-18 mm.

Described from 4 specimens in good condition from Quetta.

Nearest to *E. pennipes* Wied, from which it differs in the antennæ being mainly dark red, the patches of snow-white scales at sides of 1st abdominal segment, and the more extended clear portion of the wing margin. The dark portion of the wing has in the present species a more brownish tinge than in *pennipes*; in one of my specimens there are somewhat lighter portions in the 2nd basal, discal, and anal cells.

The specimen from Karachi mentioned by Brunetti on p. 193 of Vol. I, Diptera Brachycera, evidently belongs to this species.

Exoprosopa evanescens, Becker.

Persische Dipteren, Ann. Mus. Zool. St. Petersburg, 1912, p. 559.

I have eight specimens from Quetta which exactly correspond with Becker's description.

Head, including 1st two antennal joints, scutellum, apical portions of all abdominal segments, coxæ, femora, and tibiæ, red; 3rd antennal joint, dorsum of thorax, bases of abdominal segments, and tarsi, black or blackish. Head and thorax covered with pale yellow scales, abdomen with grey scales. Wings lightly infuscated, apical and posterior margins nearly clear, all cross veins darkened; the 1st posterior cell is crossed near its centre by a transverse vein ("mit einer überzähligen Querader"). The latter character is uncommon in the genus *Exoprosopa*, though it occurs in *E. singularis* Macq., and a few other species.

In Becker's type the 3rd antennal joint was broken off; all my specimens have this joint black, rather long and slender, with the style, which is about $\frac{1}{3}$ the length of joint, testaceous.

Exoprosopa gujaratica, n. sp.

♂ Head dull red, with short greyish pubescence, intermixed on frons with short, stiff, black hairs; frons at vertex about $\frac{1}{8}$ the width of head, at antennæ about $\frac{1}{3}$; proboscis black; 1st antennal joint yellow, hairy; second black at base, with apex yellow; 3rd black on blackish, style thick, about $\frac{1}{2}$ the length of 3rd joint.

Thorax black above, rufescent below, with short but thick greyish-yellow pubescence; pronotum and sides with longer light yellow hairs; bristles near base of wings and on postalar calli black; scutellum reddish brown towards apex covered with pubescence similar to that on thorax, with black marginal bristles.

Abdomen broadly blackish above, but red at sides and on apices of segments, pubescence concolorous with that on thorax, no black hairs at sides or at apex.

Legs red; coxæ, tips of fore femora and tibiæ darkened, all tarsi black; femora and tibiæ sparsely covered with greyish scales; intermediate tibiæ and posterior femora and tibiæ with the usual spinules.

Wings rather dark brown, with a narrow border, lighter but not hyaline, extending from the point where 1st longitudinal vein joins the costa rather irregularly to the anal margin; halteres yellow.

♀ Similar; vertex slightly broader.

Length 8-12 mm.

Described from six ♂♂ and 2 ♀♀ from Deesa, all taken in October.

This species is nearest to *E. lateralis* Brun, from which it differs in its smaller size, the absence of any black hairs on abdomen, and the extent of the lighter margin of the wings. In the present species the lighter portion is much narrower than in *lateralis*, and less well defined; there is no lighter indentation running into

discal cell. A series of both species seen side by side appear quite distinct. I have *lateralis* from Mount Abu and Matheran, but did not obtain it at Deesa.

Exoprosopa insulata, Walk.

There are several Indian species with wing markings somewhat similar to *insulata*, Walk., and I found four distinct species standing over that name in the British Museum *viz.*,

- (a) *insulata*; two specimens, including the type, from "East Indies"—also a specimen from Assam.
- (b) a specimen from Dehra Dun, not good enough to describe. It has a pure white band at the base of 4th abdominal segment, and the 1st posterior cell just open.
- (c) Two specimens from Ceylon (Col. Yerbury), not in good condition. These have the 1st posterior cell closed.
- (d) A specimen from Madhapur, with the 1st posterior cell closed. This agrees with my specimens from Matheran, which I have described above as *Exoprosopa siva*.

Brunetti probably had two or more species before him when he wrote the description of *insulata* on pp. 203-5 of Vol. I, Diptera Brachycera, though the figure of the wing on Plate III corresponds well with Walker's type, and with my specimens. I therefore give below the points in which his description differs from the type.

The proboscis does not project beyond the tip of antennæ, but just beyond the upper mouth edge, (in my *E. siva* the proboscis projects well beyond the tip of antennæ). I should describe the abdomen as follows:—

Ground colour black, covered mainly with black scales; 1st segment with a band of rather long yellowish brown erect hairs, 2nd segment with a complete basal band of pale yellow scales, 3rd and following segments with apical bands of similar but rather lighter scales, those on the 3rd and 4th segments the most conspicuous and extending over the side margins, on the other segments these bands are narrower and sometimes hardly noticeable; the whole of the dorsal surface of abdomen thinly covered with fine long black sinuous hairs; venter blackish, with black hairs, except on the 1st segment where the yellowish hairs extend well over the sides.

The wings have the dark colouring extending over the basal half of the discal cell, and the basal $\frac{2}{3}$ of the anal and axillary cells, and the spots are situated as follows:—One at the bifurcation of 2nd vein, being merely an extension of the baso-costal band; one right across the vein closing the apex of discal cell, connected anteriorly with the dark portion of the wing; free dark spots as follows: two larger ones, one near apex of upper branch of 2nd longitudinal vein, and one over cross vein connecting lower branch of same vein with 3rd longitudinal; two smaller spots towards apex of lower branch of 2nd longitudinal vein, and one each near apex of 3rd, 4th, 5th and 6th veins, some of the latter being very faint; both the 1st posterior and anal cells are widely open; the discal cell is broad at apex, and has a small appendicular vein from its lower corner; the lower vein of 2nd posterior cell meets the discal cross vein just below the middle, and has a slight appendix into discal cell; halteres yellowish, base of the club dark.

I have nine specimens, including both sexes, from Simla, which exactly agree with Walker's type.

E. bengalensis is quite distinct, but I have not seen a specimen of *brahma*.

Exoprosopa abrogata, n. sp.

♂. Head; frons at level of antennæ $\frac{1}{2}$ the width of head, at vertex about half this width; face and frons rufo-testaceous, covered with yellowish white scales, with a few short blackish hairs; antennæ red, 1st and 2nd joints with a few black hairs, 3rd joint rather short, gradually tapering, excluding style about $1\frac{1}{2}$

times as long as 1st and 2nd together, style about $\frac{2}{3}$ the length of the joint, thicker at apex than at base; facial bump rather prominent, viewed in profile about $\frac{2}{3}$ the short diameter of the eye; proboscis rufo-testaceous; occiput rather wide, covered with greyish scales, the ground colour immediately behind the eyes darker than the posterior margin.

Thorax blackish on disc, covered with greyish scales; pronotum with a collar of light yellow hairs; scutellum dark red; bristles on postalar calli and scutellum yellowish. Abdomen both above and below light red, the segments more or less blackish at base, covered with grey scales (partially denuded); 1st segment with a tuft of light yellow hairs at each side.

Legs rufo-testaceous, with some indications of grey scales on femora and tibiae; all femora and tibiae with very short black spinules; apical 2 or 3 joints of tarsi darkened.

Wings with the anterior portion as far as the end of 1st longitudinal vein tawny yellow; all cross veins and the apex of discal cell with dark tawny suffusions, and there are similar but smaller suffusions near the apex of both branches of the 2nd longitudinal vein; 1st posterior and anal cells open. The third posterior cell is divided by a veinlet which runs towards the apex of discal cell (both my specimens are alike in this respect, but it may be adventitious); base of costa with greyish scales and short black bristly hairs; halteres yellowish white.

Length 8 mm.

Described from two specimens obtained at Deesa in February.

Nearest to *auripura*, Walk., but differs as follows: smaller, antennae red, not black, 3rd joint much shorter than in *auripura*. In the latter species the whole of the wings are tawny yellow; in the present species the apical and posterior margins are, except for the suffusions on the veins, almost hyaline.

Exoprosopa dissoluta, n. sp.

♀. Head; frons at level of antennae about $\frac{2}{3}$ the width of head, narrowing at vertex to $\frac{1}{2}$ the width at antennae; face slightly convex, viewed in profile the upper mouth edge extends beyond the eye margin about half the short diameter of the eye; vertex and frons reddish brown, becoming paler towards antennae, below which the whole face and mouth edge is pale testaceous; frons with some short stiff black hairs, and covered with pale yellow scales, which extend to the mouth edge; antennae with 1st joint red, with numerous short stiff black hairs, 2nd and 3rd joints brown or blackish, 3rd gradually tapering, longer than the 1st and 2nd together, style short; proboscis black, palpi pale; occiput rather broad, black with some pale yellow scales, the indentation of the eyes with white scales; occipital fringe short, whitish.

Thorax black, with portions of metapleuræ and sternopleuræ red; pronotum with a collar of pale yellowish scale like hairs; disc covered with short yellowish scales, among which are mixed a few short stiff black hairs; patches of greyish white scale-like hairs above and below bases of wings; bristles near wing base and on postalar calli black; scutellum dark red, covered with scales like the thorax, and with black marginal bristles.

Abdomen black, apical margins of segments narrowly reddish; 1st segment with a patch of greyish scale-like hairs at each side, 2nd and following segments with basal bands of white scales, on the first three or four segments these bands cover about half the segment, those on the apical segments being wider; last two segments fringed with black hairs; venter almost entirely covered with short greyish scales, which become yellower towards apex of abdomen.

Legs; front coxæ red, covered with long grey hairs and a few stiffer black ones; remainder of legs brownish or blackish, with small black spinules on intermediate and hind femora and tibiae.

Wings; base as far as humeral cross vein dark brown; an irregular infuscated band stretches from fore margin through discal cell and apex of anal cell, becoming

narrower posteriorly, and hardly reaching hind margin of wing; the infuscation is more pronounced round all the cross veins; the discal cell has a small sub-hyaline spot near base, and another larger one near apex; 1st posterior and anal cells open; base of costa with some whitish scales and short black bristles; halteres pale.

♂ Similar, except as follows: frons slightly narrower, covered with snow-white scales; style of antennæ longer, red; occiput narrower; abdomen red, 1st and 2nd segments with broad basal triangular patches black; genitalia fringed with soft red hairs.

Length 13-14 mm.

Described from 1 ♂ and 5 ♀♀ from Quetta, mostly in good condition. The ♂ however has the abdomen somewhat denuded and has lost one wing.

This is very near to *E. undans*, Walk., of which the locality is unknown. It differs as follows: the bands of white scales on the abdomen are broader in the present species, and more distinct; the ground colour of the abdomen is darker, at any rate in the ♀; the neuration is similar, except that *undans* has a slight appendicular vein from lower corner of discal cell. The wing markings in the present species are very similar to those in *undans*, but they are darker, and all my specimens have the cross vein connecting the lower branch of the 2nd longitudinal vein with the 3rd infuscated, whereas this vein is clear in *undans*. The type and only specimen of *undans* is headless, so no comparison as regards the head is possible.

Both Major Austen and Mr. Collin, who happened to be at the British Museum when I was comparing my specimens with Walker's type of *undans*, consider the present species distinct, otherwise I should have hesitated to describe it.

Exoprosopa iridipennis, n. sp.

♂ Head with the eyes almost touching at vertex, but the frons at level of antennæ quite $\frac{1}{3}$ the width of head; frons and face nearly to upper mouth edge black, becoming much lighter at mouth edge; frons with thick black pubescence down to the antennæ, and some purple scales both above and below antennæ; proboscis rather long, blackish; palpi thin, covered with bristle-like hairs: antennæ black, 1st and 2nd joints thickly covered with long black hairs, 3rd joint bare, tapering, style about half as long as joint, with a minute terminal bristle; occiput with short greyish pubescence, and some purple scales.

Thorax black; pronotum and sides thickly covered with rather long bright golden hairs; dorsum covered with iridescent purplish blue scales, and with patches of snow-white scaly hairs near wing base; below there are patches of similar hairs on the sternopleuræ, no conspicuous bristles at base of wings or on postalar calli; scutellum brownish, with some purple scales at base, and numerous rather short black bristles along its apical margin.

Abdomen black, covered with highly iridescent purple-blue scales; 1st segment with a patch of whitish hairs at sides; 3rd segment with a large oval patch of snow-white depressed scales on each side, extending over the side margins, and indications of a much smaller patch of similar scales on extreme sides of 6th segment; remainder of the pubescence black, except that there is on the posterior margins of the last two segments an admixture of scaly white hairs; venter with the ground colour black; 2nd segment with a triangular patch of snow-white scales, the apex of the triangle being at apical margin; 3rd segment almost entirely covered by similar scales, 4th with similar scales at apex; the black part of the venter is, like the dorsal portion of abdomen, covered with iridescent purple blue scales.

Legs black; all coxæ covered with rather long greyish pubescence; intermediate and posterior femora and tibiæ with very short spinules.

Wings hyaline and highly iridescent; yellowish at base and in costal and sub-costal cells; base of costa and all the nervures testaceous; costa at base with very

short black bristly hairs mixed with white scales; squamæ whitish, with moderately long white fringe; halteres yellow; the 1st posterior cell is unusually wide at apex.

♀. Similar; the distance between the eyes at vertex about $\frac{1}{10}$ the width of head; the white scales on abdomen, both above and below, less apparent, possibly because the specimen is somewhat rubbed.

Length 13-14 mm.

Deesa; one specimen of each sex.

This belongs to the group of *E. hetrusca* Fab., and is nearest to *E. vitreicosta*, Walk., described from a headless type in poor condition. The present species is considerably larger, and the colour of the iridescent scales on the black portion is bluish-purple; in *vitreicosta* they are distinctly of a bronzy black; the type of *vitreicosta* has hardly indications of white scales on the abdomen.

Exoprosopa punjabensis, n. sp.

♂. Head; frons at level of antennæ about $\frac{1}{3}$ the width of head, lessening to $\frac{1}{4}$ of that width at vertex; black above, paler below, almost white along mouth edges; frons covered with yellowish white scales, mixed with short black hairs; face with yellowish white scales; facial bump rather small, about $\frac{1}{3}$ the short diameter of the eye; antennæ black, 1st and 2nd joints with black hairs, 3rd gradually tapering, longer than the 1st and 2nd together, style short; occiput rather broad, with snow-white scales.

Thorax black; pronotum with a collar of greyish hairs; dorsum covered with long yellowish grey scales; sides and below with long white hairs; scutellum with long yellowish grey scales; bristles at base of wings, on postalar calli, and on margin of scutellum black.

Abdomen black; 1st segment and the bases of the remaining segments thickly covered with yellowish grey scales; apical margins of all the segments except the first covered with black scales, which are mixed with longer black hairs on the last two segments; venter with the apical margins of segments broadly covered with long white scaly hairs; sides of 1st and 2nd segments with rather long grey hairs; genitalia reddish.

Legs black; femora with grey scales.

Wings rather short, hyaline and iridescent; base and costal margin very pale yellowish; all the nervures testaceous; 1st posterior and anal cells wide open, 2nd posterior cell rather wider at apex than at base; base of costa with yellowish grey scales, mixed with short black bristly hairs; halteres very pale testaceous.

Length 10-12 mm.

Described from 3 specimens from Ferozepore, Punjab.

Very near *E. vitrea*, Big., but there are no bright yellow hairs on either thorax or abdomen in the present species, and all the abdominal segments except the first have entire black apical bands; from *viteipennis*, Brun., it differs in the antennæ being black, and all the wing veins testaceous.

This species, with its banded abdomen, bears a strong superficial resemblance to one or two small species of *Andrena* which occur in the same locality. When I captured my specimens I was chiefly interested in *Hymenoptera*, and thought I had caught bees until I examined them.

Exoprosopa auriplura, Walk.

By a misprint on page 212. Diptera Brachycera, Vol. I, this name is given as *auriplena*.

Exoprosopa basifascia, Walk.

E. semilucida, Walk., should be sunk as a synonym of this species. The types of both are in the British Museum, and I can see no difference between them, not in Walker's descriptions.

Exoprosopa disrupta, Walk.

Entomologist, 1871, p. 261.

There is a specimen of this species in the B. M., labelled "Ind." My own specimens are from Lahej near Aden, and it requires confirmation as Indian. The following abridged description should enable the species to be recognised.

♂ ♀. Black; lower part of frons, antennæ, and mouth edge red; face and frons with short black hairs and white scales; occiput with sparse white scales; pronotal collar pale yellow, dorsum of thorax with yellowish white scales, sides with longer grey scales; scutellum and abdomen more or less covered with grey scales, forming bands (often denuded) at the base of abdominal segments, which bands are usually most conspicuous on the 3rd and 5th segments; abdomen of the ♂ more or less dark red; femora and tibiæ reddish; wings with dark baso-costal bands and all the veins, but more especially the cross veins, broadly suffused.

Length 8-13 mm.

(to be continued.)
